CHAPTER 2
COGNITIONS AND BEHAVIOUR IN A HIERARCHY: MULDER'S POWER THEORY REVISITED[1]

INTRODUCTION

More than thirty years ago Mulder (1958) launched a theory about the processes that arise between people having more and people having less power. The essence of the theory is quite simple: possession of power, being a scarce commodity, is an attractive goal and people having less power are inclined to acquire more power, whereas people having more power are inclined to protect their privileged position. To estimate the strength of upward and downward forces Mulder introduces the concept of power distance, being the difference in power between a less and a more powerful person. With smaller power distance from a less powerful person, the tendency of the more powerful person to protect his or her position tends to *decrease*, whereas with smaller power distance from a more powerful other, the tendency to acquire more power tends to *increase*.

Mulder's power theory has evoked some unresolved discussions which will be addressed in the present paper. One issue is a debate about Mulder's experimental methods. The present experiment is designed to overcome several methodological shortcomings which have been attributed to Mulder's experiments. We will address this issue in the method section of our study. More important is a theoretical issue that hitherto could not be investigated because of the specific power structures Mulder used in his experiments. This issue concerns the kind of comparison relation that is involved. Two different comparison relations can be distinguished: interpersonal and intrapersonal. Before we will turn to the theoretical and methodological issues, we will first explain Mulder's power theory in somewhat greater detail.

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[1] This chapter is based on Bruins & Wilke (1992a).

Mulder's power theory

The kernel of Mulder's power theory (see Mulder, 1977) consists of five propositions. In his first proposition Mulder describes the basic dynamic property of his theory:

1. "The mere exercise of power will give satisfaction," whereas the exercise of power is defined as: "determining or directing the behaviour of others to some extent (and more than in the reverse direction)" (Mulder, 1977, p.1). Whereas the first proposition departs from the exercise of power, the following propositions address the effects of power distances, or differences in power. The first two statements concern the relationship of a more powerful person towards a *less* powerful other (Mulder, 1977, p.4):
2. "The more powerful individual will strive to maintain or to increase the power distance to the less powerful person."
3. "The greater this distance from the less powerful person, the stronger the striving to increase it."

According to Mulder the power distance enlargement tendency -- PDE -- is expressed by avoiding a less powerful other, in having negative feelings about him or her, and in not identifying with the less powerful other (Mulder, 1977, p.4). The intensity of these negative responses depends on the power distance between the more powerful Actor and the less powerful target-person: the larger the distance from the less powerful target, the more negative the Actor's responses.

Next, Mulder (1977, pp. 5,6) formulates two statements about the relationship of a less powerful person towards a *more* powerful other:

4. "Individuals will strive to reduce the power distance between themselves and more powerful others."
5. "The smaller this distance from the more powerful person, the stronger the tendency to reduce it."

Thus, the tendency to reduce the power distance from a more powerful other or the power distance reduction tendency -- PDR -- is stronger the smaller the power distance. As for PDR, Mulder makes a distinction between responses on a cognitive level and responses on a behavioural level. This distinction can be related to the difference between attitudes as predispositions to behaviour and behaviour itself (see Bruins & Wilke, 1987; Fishbein & Ajzen, 1975). On a *cognitive* level the PDR is expressed as sympathy for and identification with a more powerful other

and in the idea that one is very well able to do the more powerful person's job (Mulder, 1977, p.9). On a *behavioural* level, the PDR refers to the actual take-over of the position of a person having more power (Mulder, 1977, p.9).

Again, as was the case for the PDE, the strength of an Actor's tendency to reduce the power distance from a more powerful target-other depends on the power distance: the smaller the power distance, the stronger the Actor's positive feelings towards the target (cognitive level) and the stronger the Actor's tendency to take over the target's position (behavioural level).

Interpersonal and intrapersonal comparisons: two interpretations

According to both Jaspars (1977) and Wilke, Kuyper and Lewis (1980, p.112) Mulder's power theory can be interpreted in two ways. First, responses of actors at *different* power positions to one specific target can be compared. Following Jaspars (1977) we will call this the interpersonal comparison or the *interpersonal interpretation* of Mulder's theory. Second, responses of people at *one and the same* position to various more or less powerful targets at smaller or larger power distances can be compared. We will call this the intrapersonal comparison (Jaspars, 1977) or the *intrapersonal interpretation* of Mulder's theory.

Both interpretations can be illustrated using a small hierarchy consisting of three persons A, B and C, in which A has more power than B and C, and B has more power than C. For instance, the interpersonal interpretation can refer to the comparison of A's responses to target person C, with B's responses to target person C. On the other hand, the intrapersonal interpretation for instance refers to the comparison of A's responses to B with A's responses to C.

Extra (1983) argues that Mulder's power theory should be interpreted in an interpersonal way. Emphasizing that Mulder departed from a goal-gradient perspective (Miller, 1959), Extra stresses the similarity between PDR and the tendency to approach a goal: the closer to the goal (the more powerful other), the stronger the approach tendency (the PDR). Also, Mulder's characterization of his theory as a "theory of addiction" (Mulder, 1977, p.7) suggests an interpersonal interpretation of his theory (Extra, 1983, pp. 19,20).

Turning to Mulder's own work, it is remarkable that Mulder himself has not

made a distinction between the inter- and the intrapersonal interpretation. Moreover, in order to test his theory, in the earliest paradigm, Mulder (1958) made interpersonal comparisons whereas in a subsequent paradigm (Mulder, Van Dijk, Soutendijk, Stelwagen & Verhagen, 1964) intrapersonal comparisons were made. These two paradigms will be described in the following.

In the studies of Mulder (1958) and also of Mulder, Veen, Hartsuiker and Westerduin (1971) two power structures were induced. These are presented in Figure 2.1. In each of these structures, one subject and three role players were given a number of problems they had to solve collectively. In structure I, the leader (A) exercised power by giving the solution of the problem to the three powerless others (B, C, and D). In structure II the leader (A) gave the solution to the subject (B) who was at an intermediate position, and contrary to structure I, the subject could exercise some power by giving the solution to the two powerless role players at the bottom of the structure (C and D). In this experiment interpersonal comparisons were investigated: the PDR's of subjects at the 'B' positions in structure I and structure II respectively, towards the same more powerful target position (A) are compared. In a similar way also the PDE's of these subjects towards the less powerful targets (C and D) are compared.

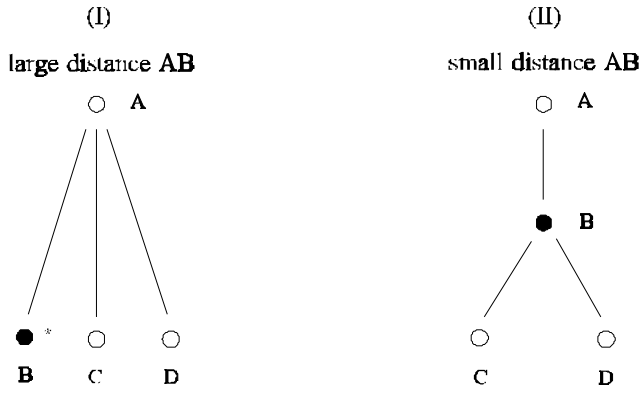

Figure 2.1. The two power structures employed by Mulder (1958). (* ● = subject)

In a second paradigm employed by Mulder (e.g. Mulder et al., 1964; Mulder et al., 1966) intrapersonal comparisons were made (see Figure 2.2). Subjects (B), together with two role-players (C and D), were always assigned to the lowest power

position within a power structure. Along with feedback about the task performance, the leader-role player (A) could punish or reward each individual member by decreasing or increasing the amount of money the member would earn for participating in the experiment. The power of the leader over the group members was varied on three levels by varying the amount of control he had over the subject's earnings. Subjects all occupied the same low power position, and assessment was made of the extent to which they intended to reduce the power distance from the more powerful member who was placed at a small, a medium or a large power distance, an arrangement which corresponds to an intrapersonal interpretation of Mulder's theory.

The foregoing suggests that Mulder's power theory may be conceived from an inter- and an intrapersonal perspective, and the description of the two paradigms shows that Mulder himself did not make a distinction between these two interpretations.

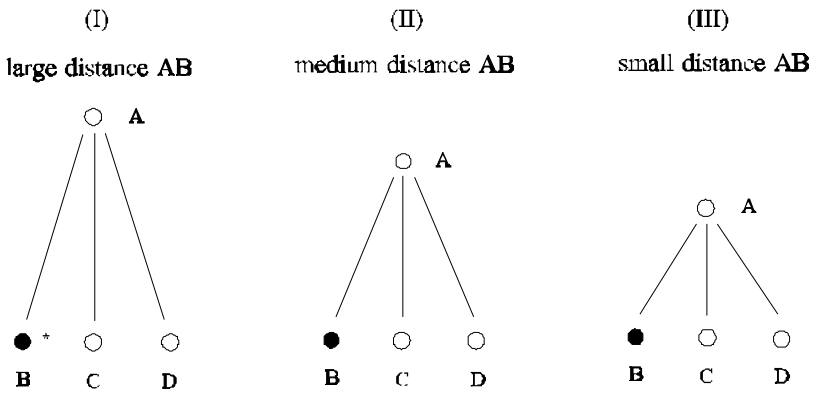

Figure 2.2. The power structures employed by Mulder *et al.* (1964). (* ● = subject)

One purpose of the present experiment is to investigate the validity of both interpretations. However, before we do so, we will summarize some of the conclusions which have been drawn from Mulder's experimental studies (see for reviews: Bruins & Wilke, 1987; Extra, 1978, 1983; Koopman-Iwema, 1980). First we will consider support from studies addressing the interpersonal interpretation, and subsequently we will review support concerning the intrapersonal interpretation.

Empirical support

In experiments referring to the *inter*personal interpretation some support is found for the first proposition of the theory "power gives satisfaction." In his first experiment, Mulder (1958) found that subjects at a higher power position (position B in structure II, see Figure 2.1) were more satisfied with their task, made fewer remarks that expressed dissatisfaction, and were more cooperative towards the other group members than members at a lower position (position B in structure I of Figure 2.1).

Also for the propositions concerning the PDE support was found by Mulder (1958): less powerful others were liked less by more powerful subjects at a large power distance than by subjects at a smaller power distance. Brinkman (1977) compared two conditions, one in which subjects could wield power over someone else, and one in which they could not. No differences in liking for the other were found between the two conditions, however.

For the PDR there is no unequivocal support either. On the *cognitive level*, Mulder (1958) found no support in terms of liking or perceived ability, and neither did Mulder et al. (1971). In this latter experiment, subjects were given descriptions of one of two possible situations similar to the structures displayed in Figure 2.1. When subjects in this as-if situation were told that they could take over the leader position (which suddenly became vacant), more subjects imagining themselves at a higher position thought they would take over the leader position than subjects imagining themselves at a lower position. Using slightly different power structures that also had to be imagined, Extra (1983) replicated this finding.

On the *behavioural level* evidence is mixed as well. In one experiment (Mulder, Veen, Rodenburg, Frenken & Tielens, 1973) Mulder's power theory was supported: a higher power position was taken over more often when the subject was at a small power distance from the vacant position than when the subject was at a large power distance. However, in other experiments (Extra, 1983; Mulder, Veen, Hijzen & Jansen, 1973) no differences in take-over of the leader position were found.

It should be noted that the drawing of conclusions from these results is hampered by several shortcomings of Mulder's research concerning the interpersonal approach, which have been brought up by Extra (1978, 1983), Koopman-Iwema (1980) and Bruins & Wilke (1987). In the method section of this

study these shortcomings will be described, and it will be indicated how these pitfalls are avoided in the present research.

The two studies referring to the *intra*personal interpretation were aimed at testing Mulder's first proposition concerning the satisfaction arising from the exercise of power, and at testing the relationship between power distance and the PDR. No support was found for the proposition regarding satisfaction, but as was described above, in all conditions of these two experiments subjects were powerless. Therefore it is not surprising that no differences in satisfaction were found. As for the PDR, the theory was only partly supported: leaders at a small power distance were liked more and were rated as being more equal to the subject than leaders at a larger power distance, but no differences in perceived ability of the leader were found.

In sum, research addressing both interpretations has been carried out, but for neither of the two perspectives is the evidence for the theory unequivocal. In the present research a newly developed paradigm will be used which circumvents a number of methodological shortcomings of Mulder's own experiments. Using this paradigm, it will be possible to address the question whether an interpersonal or an intrapersonal interpretation of the theory better explains the relationships between power distance and the power tendencies towards less and more powerful others.

EXPERIMENT 1

Method

Subjects.

In this experiment 65 male and 9 female students from a College of Advanced Technology participated. They were between 17 and 24 years old and they received 10 Dutch guilders (about $5) for their participation. Six subjects were recruited for each experimental session. They were randomly assigned to the experimental conditions, resulting in 19 subjects assigned to each of the positions B, C, and D, and in 17 subjects assigned to position E.

Account of the design.

In this section we will describe the shortcomings of Mulder's research concerning the interpersonal interpretation of his theory, as they were brought up by a number of reviewers of Mulder's work (Bruins & Wilke, 1987; Extra, 1978, 1983; Koopman-Iwema, 1980). Every description of a shortcoming is followed by a short explanation of the way the shortcoming will be avoided in the present research. In the procedure section an exposé will be given of the way Experiment 1 was set up, and how it was presented to the subjects.

A first criticism is that Mulder (1958, see Figure 2.1) not only manipulated the extent to which subjects could wield power over others, but that at the same time he introduced two different power structures (Extra, 1978, p.308; Koopman-Iwema, 1980, p.225). More specifically, as has been shown by Ng (1980), power structures can be classified using four different parameters: (1) the number of different power levels in the group; (2) the number of levels a person is away from the highest level; (3) the number of people at the various power levels, and (4) the size of the power distance between two adjacent power levels. The first three parameters are called structural parameters, the fourth is a non-structural parameter. In terms of structural parameters the two structures in Figure 2.1 can be described as follows: structure I has two levels, the subject is one level away from the highest level, at this highest level there is one person, and at the lowest level there are three persons; structure II has three levels, the subject is one level away from the highest level, and at the different levels from top to bottom there are one, one and two individuals, respectively. In two experiments Ng (1980) varied these parameters and his main conclusion was that the structural parameters (and especially the number of levels from the highest level and the number of people at each level) had a stronger influence on PDR than the non-structural parameter, suggesting that the effects found by Mulder (1958) and Mulder, Veen, Rodenburg, Frenken and Tielens (1973) may possibly be attributed to the use of structurally different power configurations.

In contrast to Mulder's manipulation of power distance which is ambiguous in terms of the different structural parameters he varied, in the present experiment we will induce power distances in terms of only one structural parameter, to wit, the number of levels a subject is away from the highest power level. Different power distances will be induced within one and the same power structure. This

Figure 2.3. The power hierarchy employed in the present research. (* ● = subject)

enables us to vary power distance while holding constant the number of levels, the number of individuals at each level, and the distances between adjacent levels. The structure we use is a power hierarchy with six positions labelled 'A' through 'F' (see Figure 2.3) of which only the four middle positions are actually occupied by subjects. The power distance from the top level may assumed to be larger as the subject is lower in the hierarchy, and inversely, the power distance from the bottom may be considered larger as the subject is higher in the hierarchy. The experimental design now is straightforward, there is one between-subjects factor "position": the subject is assigned to either position B, C, D or E.

As was pointed out by Veen (1970), another flaw of Mulder's (1958) research is the use of two different tasks: subjects in structure I (see Figure 2.1) could only receive the solution from the leader, whereas subjects in structure II could also pass it on to the two role players at the bottom. The fact that the task for subjects in the large power distance condition was less attractive than the task of the subjects in the small power distance condition, may suggest an alternative explanation for the differences in reported satisfaction Mulder found. We exclude this alternative explanation by giving subjects the impression that they were all provided with the same task irrespective of their position within the power structure.

Finally the measurement of the power tendencies can be improved (Extra, 1978, p.316; Koopman-Iwema, 1980, p.238). Mulder asked subjects to rank order the others in terms of, for example, liking. From these rank orderings two conclusions were drawn, namely that the leader was liked very much, and that the

two role players at the bottom were not liked at all. Clearly, these two conclusions are not independent of each other. In the present experiment rating scales were introduced allowing independent measurement of PDE and PDR.

From the above it is clear that in the present study many of the shortcomings of previous research were avoided, by using a power structure in which different power distances were induced, by giving all subjects the same task, and by using rating scales instead of rank orderings. In the experiment subjects participated in a dynamic organization in which trading tasks were performed and in which restricted interaction among its members was possible, a set-up which may be assumed to have had some appeal because of its likeness to a real-life organization.

Procedure.

Upon arrival in the laboratory subjects were welcomed by the experimenter who guided them to separate cubicles. In each cubicle there was a micro computer that was linked to a central LSI-11 computer that controlled all communications and recorded all responses. Subjects were told that they would be participating in an investment trust. The nature of an investment trust was briefly explained as being a private company holding large amounts of money which may be converted into securities or the reverse, aiming to make profits for clients who have trusted their funds to the company. Next, it was indicated that just as in real life, not everyone would have the same influence within the trust. Of the six individuals present, 'A' would have most influence, 'F' would have least influence. Then subjects practised the task they had to perform later. This task consisted of buying and/or selling various stocks (such as, for example, 'KLM'). Decisions on whether or not to buy or to sell at a certain moment had to be based on a graph representing the value of a share during a period of four weeks prior to the moment of the decision. An example of such a graph is shown in Figure 2.4. After five practice trials subjects were randomly assigned to one of the four positions B, C, D or E. Each subject received a budget of which only the relative size was indicated: everybody had a budget twice as large as the budget of the immediate subordinate, and (therefore) half the size of the budget of the immediate supervisor. Half of this budget consisted of money, the other half consisted of shares. Of every stock to be presented in graphic form, the subject already had five shares in his or her budget,

and together with these shares the subject had enough money to buy five more shares. The higher a subject was in the hierarchy, the larger was his or her budget. Consequently, the shares he or she had to buy or to sell represented a larger amount of money. Thus, although a higher position was related to more influence, the actual task subjects had to perform was exactly the same for all positions within the hierarchy.

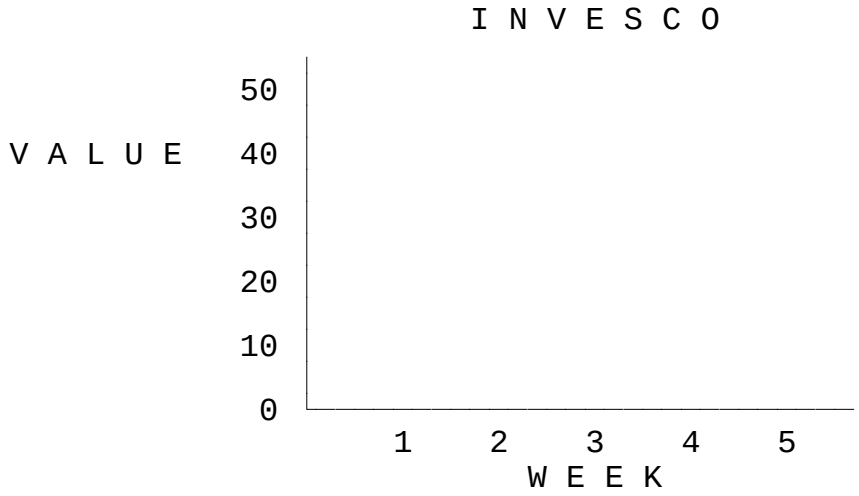

Figure 2.4. One of the graphic representations used in the stock-market task.

After a few manipulation checks, the main task started. This task was similar to the practice-task, but now ten different stocks were presented. For five of these stocks the subject was given an opportunity to give advice to his or her immediate subordinate on what decision to make, that is whether or not to buy or to sell a number of shares. Five other stocks were accompanied by advice from the immediate superior on what to do. After this task some more manipulation checks were made, and the dependent measures were taken by asking a number of questions requiring responses on 20-point rating scales.

In sum, the most important aspects of the present research can be described as follows: (1) manipulation of power distance is not confounded with different power structures; (2) manipulation of power distance is not confounded with

attractiveness of the task; (3) power positions differ from one another in three ways: a) the higher one is in the hierarchy, the more money one has at one's disposal for making investments; b) having a higher power position implies greater influence on the outcome of the group as a whole; and c) the higher, the larger the number of subordinates one can give unidirectional advice through the chain of command.

Results and Discussion

Manipulation checks.

In the following we will report the results on (1) the assignment of positions, (2) measures related to the hierarchy, (3) measures about influence and (4) measures related to the task. All of these manipulation checks were posed after the subjects had completed the main trading task.

Subjects were asked which position they had been assigned to, how many others occupied a higher position, and how many others occupied a lower position. None of the subjects answered all three questions wrongly. Also subjects agreed that they were assigned to their positions randomly (M=16.68, scale ranging from *totally disagreed* (1) to *totally agree* (20)), and this was not influenced by position ($F(3,70)=1.60$, n.s.).

Measures concerning the hierarchy indicated that subjects agreed they all had to give advice to their immediate subordinate (M=18.12, on the same 20-point rating scale. Again, no position effect was found ($F(3,70)<1$, n.s.). Subjects also had recognized the differences in budget available to the holders of the different power positions: they strongly disagreed with the statement that people lower in the hierarchy had a larger budget than people higher in the hierarchy (M=4.15, no position effect ($F(3,70)<1$, n.s.)).

For the measure of own influence, a position effect was found ($F(3,70)=28.87$, $p<.0001$): subjects in position B claimed they had more influence (M=14.84) than subjects in position C (M=12.37), who reported having more influence than persons in position D (M=9.37), who again said they had more influence than persons in position E (M=6.18).

Also, questions were asked on the actual exercise of influence. First,

subjects were asked how much influence others had exercised on them. An analysis of variance with a within-subjects factor target (i.e. the judged others in the hierarchy) and a between-subjects factor position yielded a significant effect of target ($F(1,70)=25.52$, $p<.001$)[2] as well as a significant interaction effect ($F(3,70)=8.97$, $p<.001$). It appeared that more powerful others were said to have exercised more influence than less powerful others. Also, a systematic difference among the more powerful others was found: the person at the next higher position was said to have exercised more influence than the other superiors. Second, subjects were asked how much influence they had exercised on the others. Again, a significant effect for target ($F(1,70)=34.51$, $p<.001$), and a significant interaction effect ($F(3,70)=26.29$, $p<.001$) were obtained. Subjects reported having exercised more influence on less powerful others than on more powerful others. Moreover, subjects reported having exercised more influence on the person at the next lower position than on the other subordinates.

The task was rated as rather pleasant ($M=12.94$), as fairly interesting ($M=14.46$) and as being neither easy nor difficult ($M=10.11$). For none of these three measures was a significant effect for position found (all F-values < 1), suggesting that the attractiveness of the task was indeed held constant for positions, as intended.

In sum, these results suggest that all of our manipulations were perceived as intended: subjects knew their positions, they were aware of the different budgets and of the procedures concerning the giving and receiving of advice.

Dependent variables.

After subjects had been working in the mock investment trust, several questions derived from Mulder's theory and from his own experiments (e.g. Mulder, 1958; Mulder et al., 1964) were posed. First two questions will be dealt with that are closely linked to the theory, thereafter the results from the questions pertaining to the theoretical issue will be presented.

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[2] Because of systematically missing data, for a number of variables (e.g. Subjects did rate the power they exercised on others, but not the power they exercised on themselves) a univariate analysis of variance was employed. In this analyses subjects were considered as a random variable nested within the factor 'position' (Finn & Mattson, 1974). As test criterion we used the F-statistic based on a conservative number of degrees of freedom (Horton, 1978, p.150).

Subject's satisfaction was investigated by means of the question "How satisfied are you with your position within the organization"? The answers could be given by means of a 20-point rating scale (ranging from *very dissatisfied* (1) to *very satisfied* (20)). Position appeared to have a significant effect ($F(3,70)=15.08$, $p<.0001$). T-tests revealed that subjects at B ($M=14.21$) and C ($M=12.63$) were more satisfied than subjects at D ($M=8.16$) and E ($M=7.88$). This is largely in accordance with Mulder's first proposition stating that power gives satisfaction. A second question addresses the striving to obtain more power: "To what extent would you like to have more influence within the company?" (*not at all* (1) to *very much* (20)). No significant differences were found between positions ($F(3,70)=2.14$, n.s.).

The questions that will be dealt with next were posed to address the theoretical issue raised in the introduction. For these questions, each subject (Actor) being at a certain position (B, C, D or E) had to rate all others ('a' to 'f'), referred to as the targets. We will first focus on three cognitive variables. Identification was measured by asking the subjects "How well do you think you match with each of the following persons?" All targets were presented sequentially and subjects or Actors could type in their answers using a rating scale from *very badly* (1) to *very well* (20). The question for relative ability was phrased in the following way: "How much do you think each of the following persons is less or more able than you?" (rating scale from *far less able* (1) to *far more able* (20)). The third cognitive variable was liking, measured by asking the subjects "How would you describe the following persons?", *unpleasant* (1) to *pleasant* (20). After the cognitive measures it was announced that in a next session of buying and selling stocks it was possible that one would obtain another position within the organization. Subjects themselves could determine which position they would obtain by answering the question: "How much would you like to be at each of the following positions?", *not at all* (1) to *very much* (20). It was suggested that the more attractive a position was rated, the higher the likelihood of indeed obtaining that position. We will refer to this behavioural variable (Mulder, 1977, p.9, in juxtaposition to the more cognitive variables) as attractiveness of position.

The interpersonal and the intrapersonal model.

Since preliminary analyses indicated that for the liking variable no significant

differences were to be found, this variable will not be investigated here. Mulder's (1958) finding that liking for other group members did vary, might be due to the circumstance that there was considerably more contact between group members in most of Mulder's experiments than in our study, allowing subjects to form a more complete and detailed opinion about the other group members.

Table 2.1.
Cell means of three dependent variables.

		position of the Actor			
dependent variable	target	B	C	D	E
identification	'a'	10.95	12.42	12.37	10.53
	'b'	-	13.32	12.42	11.12
	'c'	11.74	-	11.89	10.88
	'd'	10.58	12.42	-	10.35
	'e'	10.00	10.95	10.16	-
	'f'	9.32	9.53	8.21	10.35
relative ability	'a'	9.63	12.37	12.58	12.18
	'b'	-	10.74	11.84	11.88
	'c'	9.63	-	10.89	11.06
	'd'	9.68	9.53	-	10.18
	'e'	9.47	9.00	9.11	-
	'f'	9.32	8.32	8.21	9.00
attractiveness of pos.	'a'	13.89	12.58	14.47	12.71
	'b'	-	14.37	15.00	14.41
	'c'	12.74	-	14.95	12.82
	'd'	8.68	9.58	-	9.41
	'e'	5.21	6.79	5.68	-
	'f'	4.05	3.79	3.26	4.00

First we will deal with the *interpersonal* interpretation of the PDE, focusing on judgements of the same target from different Actors. More exactly, according to the interpersonal interpretation of the PDE, a specific target will be rated more negatively by a more powerful Actor at a *larger* power distance than by a more powerful Actor at a *smaller* power distance. On the basis of this interpretation, a specific prediction can be formulated for every target who is judged by at least two more powerful Actors. For target 'f' for example, the rating from B is expected to be lower than the rating from C, which again is expected to be lower than the rating from D, which in its turn is expected to be lower than the rating from E. The same pattern is construed for the two other targets who are rated by at least two more powerful Actors. The predictions are depicted in Figure 2.5. In the line for target 'f,' for instance, the above relationships are represented by the increasing numbers from 1 through to 4.

		ACTORS			
		B	C	D	E
	e	1	2		
targets	d	1	2	3	
	f	1	2	3	4

Figure 2.5. Predictor-matrix for the *inter*personal interpretation of the PDE.

To investigate the interpersonal interpretation of the PDE we did not use the individual judgements of the subjects. Instead, the entries in the predictor matrix presented in Figure 2.5 were regressed on the corresponding cell means of each of the three data matrices presented in Table 2.1, after adjusting these cell means. This adjustment was done because we were only interested in the differences

between actors, that is, in differences within the rows of the data matrix, and not in any differences between rows. The differences between rows were therefore eliminated by subtracting the mean of the relevant cell means of each row, from those cell means. In this way only the differences within the rows were maintained. Subsequently, all entries in the predictor matrix were regressed on the corresponding adjusted cell means. This was done separately for identification, relative ability, and attractiveness of position. The results are presented in the PDE/INTERP column of Table 2.2. Let's first consider the identification variable. Since in Table 2.2 only the significant beta weights are given, the interpersonal interpretation of Mulder's PDE was not supported for the identification data. In the lower/left-hand triangle of the identification data in Table 2.1 we can see that for identification with targets 'd,' 'e' and 'f' there is indeed no systematic decrease with increasing power distance (i.e. from right to left in the rows of the triangle). For none of the other variables is a significant beta weight found. Therefore, the interpersonal interpretation of the PDE receives no support.

Table 2.2.
Beta weights per variable, per hypothesis. Only significant ($p<.05$) betas are presented.

	P D E		P D R	
predictors:	INTERP. Fig. 2.5	INTRAP. Fig 2.6	INTERP. Fig 2.7	INTRAP. Fig. 2.8
dep. variables				
identification		.52		
relative ability		.24	-.67	-.46
attractiveness of pos.		.75		

The second interpretation of Mulder's PDE is the *intrapersonal* one. According to this interpretation comparisons are made between the ratings of

different targets who are rated by the same Actor. Specifically, the intrapersonal interpretation of the PDE states that an Actor will rate a less powerful target at a larger power distance more negatively than a less powerful target at a smaller power distance. In Figure 2.6 this predictor is presented for every Actor who rated two or more less powerful others. Actor B for example, is expected to give a quite negative rating of target 'f' who is at a large power distance, a somewhat less negative rating of target 'e,' an even less negative rating of target 'd' and the least negative rating of target 'c.' These relative differences are presented in the column of Actor B in Figure 2.6. Predicted values for the other Actors are established in a similar way (see Figure 2.6). Since we now are only interested in differences within columns, differences between columns are eliminated by standardising each subject's ratings of others in such a way that per subject the means of all ratings under consideration are zero, thereby maintaining only the differences within columns. After this adjustment, the entries in the predictor matrix are regressed on the corresponding (adjusted) individual ratings. The results are presented in Table 2.2. The positive beta weight for identification was significant, suggesting that, as expected, Actors identified less with a less powerful target at a larger power distance than with a less powerful target at a smaller power distance. In the lower/left-hand triangle of the identification data in Table 2.1 it can be seen that the identification of each of the Actors B, C and D with less powerful others decreased with increasing power distance (i.e. from top to bottom in the columns of the triangle).

		ACTORS		
		B	C	D
	c	4		
	d	3	3	
targets	e	2	2	2
	f	1	1	1

Figure 2.6. Predictor-matrix for the *intra*personal interpretation of the PDE.

The results of the other variables were similar to the identification results: the larger the power distance from the Actor, the less Actors rated less powerful others as able, and the less Actors rated less powerful positions as attractive (see Table 2.1). The intrapersonal interpretation of the PDE therefore is strongly supported.

In exactly the same ways as was done above, an interpersonal and an intrapersonal interpretation of the *PDR* were investigated. In the *interpersonal* interpretation comparisons were made between different Actors all judging the same target. According to the interpersonal interpretation of the PDR it may be expected that a target is rated more positively by a less powerful Actor at a *smaller* power distance than by a less powerful Actor at a *larger* power distance. For every separate target being judged by at least two less powerful Actors this prediction is represented in Figure 2.7. Again, since we were only interested in differences within rows, regression analyses were performed on the cell means corrected for differences between rows. The results are summarized in Table 2.2. As indicated in the column for interpersonal PDR, significant differences were found only for relative ability. A negative beta weight was obtained, meaning that a target was rated *less* able the *higher* the entry in the predictor-matrix (see Figure 2.7), or, the *smaller* the power distance. Since in general more powerful others were rated more able than self, the negative beta weight indicates that as for ability, targets were rated more equal to the Actor the smaller the power distance. This is in agreement with Mulder's prediction that the smaller the power distance, the more strongly a less powerful Actor will have the idea that he or she is able to do the more powerful target's job.

		ACTORS			
		B	C	D	E
	a	4	3	2	1
targets	b		3	2	1
	c			2	1

Figure 2.7. Predictor-matrix for the *inter*personal interpretation of the PDR.

In the *intrapersonal* interpretation of the PDR, comparisons were made between more powerful targets all being judged by the same less powerful Actor. According to this interpretation it could be expected that an Actor rates a more powerful target at a smaller power distance more positively than a more powerful target at a larger power distance. This prediction is presented in Figure 2.8 in the form of a matrix . The results obtained from the regression analyses on the adjusted individual ratings are presented in Table 2.2. A significant (negative) beta weight was found only for relative ability, suggesting that as predicted by Mulder, the smaller the power distance the more the Actor considered the target as equally able.[3]

		ACTORS		
		C	D	E
	a	1	1	1
	b	2	2	2
targets	c		3	3
	d			4

Figure 2.8. Predictor-matrix for the *intra*personal interpretation of the PDR.

[3] The intrapersonal results for PDE and PDR of the relative ability variable suggest an alternative explanation for the findings of the present experiment. The relative ability results point to the subjects' perceptions of an ability hierarchy parallel to the power hierarchy that was induced experimentally: higher targets were rated as more able the larger the power distance, and lower targets were rated as more able the smaller the power distance. In order to rule out the alternative explanation that the effects we found were brought about by the perceived ability hierarchy, a partial replication of Experiment 1 was conducted, in which an ability hierarchy was experimentally created independently from the power hierarchy. Whether ability was positively or negatively related to power did not influence the results, indicating that the present findings were caused by the power manipulation.

To summarize, the interpersonal interpretation hardly received any support, and only the PDE-part of the intrapersonal interpretation received consistent support. The finding that hardly any interpersonal differences were found, that is, that Actors hardly differed from one another in the ratings they gave a target, is in accordance with the result from the direct measurement of the power tendency. As was reported at the beginning of the results section, no difference between Actors was found as to how much they would like to have more influence within the company. In the general discussion a possible explanation for these results will be given that also takes into account the support that was found for the intrapersonal interpretation of the PDE. Still, these results differ markedly from those reported in some previous investigations, where the interpersonal interpretation of the PDR received noteworthy support (Bruins & Wilke, 1987). Therefore, in Experiment 2 a second attempt was made to investigate the relationship between power distance and interpersonal PDR.

EXPERIMENT 2

In this experiment we focus on behavioural measures not employed in Experiment 1 that specifically address the interpersonal interpretation. In the experiment of Mulder, Veen, Rodenburg, Frenken and Tielens (1973), subjects could indicate whether or not they took over the leader's position that suddenly had become vacant. This measure will now also be used in Experiment 2. It differs from the behavioural measure we employed in Experiment 1 because now only *one* position is announced as vacant, whereas in the measure used in Experiment 1 it was announced that *all* positions had become vacant and would be redistributed among the subjects. Moreover, a new behavioural measure for the PDE is introduced by announcing that the lowest power position in the hierarchy has become vacant. Apart from these two additional variables, we employed the rating scale measures used in Experiment 1.

Method

Subjects.

The participants in the experiment were 63 male psychology and management science students aged between 19 and 24. Six subjects were recruited for each experimental session, and they were randomly assigned to conditions.

Design.

In the original set-up of the experiment, three independent factors were implemented. Subjects were assigned to either position B or E. Assignment was either Random or Congruent (the higher a subject's score on the pre-test allegedly measuring the subject's ability to make profit by trading shares, the higher the obtained position). Moreover, two somewhat different tasks were presented to the subjects. One task was exactly the same as the task used in Experiment 1. This task consisted of stocks of which the prices fluctuated rather strongly, making it difficult for the subject to predict the price movements. In the second task the price movements of the different stocks were more predictable. This second task consisted of graphics with continually in- or decreasing lines representing the price of the stock. This resulted in a 2 (position: B vs. E) * 2 (assignment: Random vs. Congruent) * 2 (task: Unpredictable vs. Predictable) factorial design.

Because no consistent effects of assignment and of task were found, we will only investigate the effects of the position factor by collapsing over the other factors.

Procedure.

The procedure was identical to that in Experiment 1, except that whereas in the Random conditions the first task of buying and selling was introduced as "just a practice-task", in the Congruent conditions it was introduced as a means of establishing which positions subjects would be assigned to later on. After subjects had completed this first trading task, they were assigned to positions. In the

Random conditions it was announced that the computer would randomly assign subjects to conditions. In the Congruent conditions, it was announced that for the functioning of an investment agency it would be most profitable for a more able person to get a higher power position, and a less able person to get a lower power position. Subsequently subjects were assigned to a power position either on a random basis (e.g. "You are assigned to position B"), or in a congruent way (e.g. "You had 27 points on a scale from -50 to +50, and therefore you are assigned to position B"). The rest of the procedure was exactly the same as the one followed in Experiment 1, except that now a few additional questions were posed, some addressing the situation in which position 'a' became vacant, others addressing the situation in which position 'f' became vacant. These questions were posed at the end of the experiment, before the final question in which (as in Experiment 1), all positions were to be redistributed among the subjects.

Results and Discussion

Manipulation checks.

All but two subjects answered all three questions concerning the obtained position correctly.

Dependent variables.

In this study, we focus on the interpersonal interpretation of Mulder's theory. First of all, the interpersonal results from the rating scale measures used in Experiment 1 will be considered. Following this, the results of two new behavioural variables will be presented. For the cognitive variables identification and liking, as well as for the behavioural variable that made redistribution of *all* positions possible (i.e. attractiveness of position), the results from Experiment 1 were replicated: no interpersonal PDE or PDR were found.

However, for the newly introduced behavioural variables that announced only one vacant position, effects of position (i.e. power distance) were found. As for the

interpersonal *PDE*, no difference was found for the question "To what extent do you feel called upon to take over position 'f'" ($F(1,61)<1$, n.s.), but a difference was found for the question "To what extent are you eligible to take over position 'f'" ($F(1,61)=39.64$, $p<.0001$), indicating that subjects in position E considered themselves more eligible ($M=11.32$) than subjects in position B ($M=3.41$). Moreover, the behavioural measure asking subjects whether they would actually take over position 'f' indicated that subjects in position E did this more often than subjects in position B ($\chi^2(1)=4.65$, $p<.05$).

Also for the interpersonal *PDR* support was found. For the question "To what extent do you feel called upon to take over position 'a'" a significant effect of position was found ($F(1,61)=8.13$, $p<.01$) indicating that subjects in position B felt more called upon ($M=17.25$) than subjects in position E ($M=14.61$). Also for the question "To what extent are you eligible to take over position 'a'" a difference was found ($F(1,61)=34.19$, $p<.0001$), indicating that subjects in position B considered themselves more eligible ($M=16.50$) than subjects in position E ($M=9.81$). Moreover, the behavioural measure asking subjects whether they would actually take over position 'a' indicated that subjects in position B did this more often than subjects in position E ($\chi^2(1)=8.94$, $p<.005$).

These results seem to indicate that for the behavioural variables which make available one vacant position, the interpersonal interpretation of Mulder's theory is supported far more strongly than for the rating scale variables employed in Experiment 1.

GENERAL DISCUSSION

Using an experimental set-up that circumvented a number of shortcomings of the research conducted by Mulder and his followers, the present study attempted to reinvestigate Mulder's power theory. This goal was achieved by creating power distances of various widths by varying just one structural aspect of the power configuration in which subjects were placed. Also, the attractiveness of the task was held constant over positions. This attempt to heighten the internal validity of the experiment has of course some consequences for its external validity. The situations that were investigated here (i.e. ad-hoc groups having rather unusual

chain-like power structures), are seldom encountered in reality. The direct application of the results reported in this study will therefore have to wait for further extensions of the simple and straightforward experimental situations that were used.

The theoretical issue treated in this study addressed two possible interpretations of the relationships between power distance, and the PDE and the PDR. In Experiment 1 both interpretations were investigated. For the intrapersonal interpretation only support for the PDE was found. For the interpersonal interpretation no support was found. Because in previous studies noteworthy support for this interpretation was found, it was again investigated in Experiment 2 by introducing two new behavioural measures besides the rating scale measures used in Experiment 1. For the rating scale measures again no support for the interpersonal interpretation was found. For the newly added behavioural measures however, differences were found that were in agreement with the interpersonal interpretation of the PDE and the PDR. Apparently, under the proper conditions, the interpersonal interpretation of both the PDE and the PDR is supported. The results of the new behavioural measures corroborate Extra's (1983) suggestion that the interpersonal interpretation is the one that is most strongly in agreement with the basic suppositions of the theory, thereby discarding the intrapersonal interpretation.

An explanation for the inter- and intrapersonal results could be that the power tendencies Mulder described only operate when people see an opportunity to improve their (power) position. This idea resembles Mazur's (1973, 1983) notion that status struggles are more likely when actors disagree about their relative status position, that is, when the hierarchy is unstable. In the present research subjects were assigned to a position, and they could very well have had the impression that the hierarchy that was established would remain the same throughout the experiment. Because in such a stable hierarchy every attempt to obtain more power would surely fail, there perhaps was no reason to make such an attempt. This can explain why no differences between subjects at the various positions were found as to the degree with which they would like to have more influence within the organization. Also, this explanation can account for the fact that the preference for a certain position did not depend on the power distance between the Actor and this position. No matter how large or small the distance, in a stable hierarchy there is no chance to gain power, and it thus can be understood that power distance had no

effects.

In contrast to the stable hierarchy as it was induced in Experiment 1, the vacancies created by the behavioural measures of Experiment 2 may have introduced possibilities for demotion or promotion, thereby triggering the PDE and the PDR. Finally, this explanation is consistent with the intrapersonal results from Experiment 1: apparently subjects were more concerned about maintaining their present positions than about striving for a higher power position, reflected in the differences in intrapersonal PDE, and in the lack of such differences for intrapersonal PDR, respectively.

In general, these results may indicate that there are certain requirements as to the circumstances under which downward or upward power tendencies will occur. One of the circumstances that is suggested by the present study is that people must perceive some possibilities for their situations to change in terms of the power they have.